HORSEPOWER / RPM / TORQUE RELATIONSHIP

Horsepower (HP)	Speed (RPM)	Torque (T)
Constant ↔	Increases ↑	Decreases ↓
Constant ↔	Decreases ↓	Increases ↑
Increases ↑	Constant ↔	Increases ↑
Decreases ↓	Constant ↔	Decreases ↓
Increases ↑	Increases ↑	Constant ↔
Decreases ↓	Decreases ↓	Constant ↔

NOTE: It is important to realize that when you increase or decrease speed (RPM), horsepower also increases or decreases proportionately. HOWEVER, torque always remains constant

NOTE: Ratios, whether by gears, belts, chain and sprockets or anything else, are usually thought of as speed reducers, or less often, as speed increasers. They should be thought of more in terms of what they do to torque. A speed reducer is a torque increaser and vice versa. The laws of physics dictate that a change of speed via a ratio, proportionally changes the torque, as a factor of the ratio.   Disregarding the friction in the system, the torque is multiplied or divided as a factor of the ratio. Thus a 5:1 speed reduction ratio, multiplies the input torque five (5) times (a MECHANICAL ADVANTAGE) and 1:5 speed increasing ratio would reduce the torque five (5) times (a MECHANICAL DISADVANTAGE)